```
                  10        20        30        40        50        60
         |----|----|----|----|----|----|----|----|----|----|----|----|
    1    HHNGTNGTMMQYFEWYLPNDGNHWNRLRDDAANLKSKGITAVWIPPAWKGTSQNDVGYGA   60
    3    -AAPFNGTMMQYFEWYLPDDGTLWTKVANEANNLSSLGITALWLPPAYKGTSRSDVGYGV   59
    2    HHNGTNGTMMQYFEWHLPNDGNHWNRLRDDASNLRNRGITAIWIPPAWKGTSQNDVGYGA   60
    4    HHNGTNGTMMQYFEWYLPNDGNHWNRLNSDASNLKSKGITAVWIPPAWKGASQNDVGYGA   60

                  70        80        90       100       110       120
         |----|----|----|----|----|----|----|----|----|----|----|----|
    1    YDLYDLGEFNQKGTVRTKYGTRNQLQAAVTSLKNNGIQVYGDVVMNHKGGADGTEIVNAV   120
    3    YDLYDLGEFNQKGTVRTKYGTKAQYLQAIQAAHAAGMQVYADVVFDHKGGADGTEWVDAV   119
    2    YDLYDLGEFNQKGTVRTKYGTRSQLESAIHALKNNGVQVYGDVVMNHKGGADATENVLAV   120
    4    YDLYDLGEFNQKGTVRTKYGTRSQLQAAVTSLKNNGIQVYGDVVMNHKGGADATEMVRAV   120

                 130       140       150       160       170       180
         |----|----|----|----|----|----|----|----|----|----|----|----|
    1    EVNRSNRNQETSGEYAIEAWTKFDFPGRGNNHSSFKWRWYHFDGTDWDQSRQLQNKIYKF   180
    3    EVNPSDRNQEISGTYQIQAWTKFDFPGRGNTYSSFKWRWYHFDGVDWDESRKLS-RIYKF   178
    2    EVNPNNRNQEISGDYTIEAWTKFDFPGRGNTYSDFKWRWYHFDGVDWDQSRQFQNRIYKF   180
    4    EVNPNNRNQEVTGEYTIEAWTRFDFPGRGNTHSSFKWRWYHFDGVDWDQSRRLNNRIYKF   180

                 190       200       210       220       230       240
         |----|----|----|----|----|----|----|----|----|----|----|----|
    1    RGTGKAWDWEVDTENGNYDYLMYADVDMDHPEVIHELRNWGVWYTNTLNLDGFRIDAVKH   240
    3    RGIGKAWDWEVDTENGNYDYLMYADLDMDHPEVVTELKNWGKWYVNTTNIDGFRLDAVKH   238
    2    RGDGKAWDWEVDSENGNYDYLMYADVDMDHPEVVNELRRWGEWYTNTLNLDGFRIDAVKH   240
    4    RGHGKAWDWEVDTENGNYDYLMYADIDMDHPEVVNELRNWGVWYTNTLGLDGFRIDAVKH   240

                 250       260       270       280       290       300
         |----|----|----|----|----|----|----|----|----|----|----|----|
    1    IKYSFTRDWLTHVRNTTGKPMFAVAEFWKNDLGAIENYLNKTSWNHSAFDVPLHYNLYNA   300
    3    IKFSFFPDWLSYVRSQTGKPLFTVGEYWSYDINKLHNYITKTDGTMSLFDAPLHNKFYTA   298
    2    IKYSFTRDWLTHVRNATGKEMFAVAEFWKNDLGALENYLNKTNWNHSVFDVPLHYNLYNA   300
    4    IKYSFTRDWINHVRSATGKNMFAVAEFWKNDLGAIENYLQKTNWNHSVFDVPLHYNLYNA   300

                 310       320       330       340       350       360
         |----|----|----|----|----|----|----|----|----|----|----|----|
    1    SNSGGYYDMRNILNGSVVQKHPTHAVTFVDNHDSQPGEALESFVQQWFKPLAYALVLTRI   360
    3    SKSGGAFDMRTLMTNTLMKDQPTLAVTFVDNHDTEPGQALQSWVDPWFKPLAYAFILTRQ   358
    2    SNSGGNYDMAKLLNGTVVQKHPMHAVTFVDNHDSQPGESLESFVQEWFKPLAYALILTRE   360
    4    SKSGGNYDMRNIFNGTVVQRHPSHAVTFVDNHDSQPEEALESFVEEWFKPLAYALTLTRE   360

                 370       380       390       400       410       420
         |----|----|----|----|----|----|----|----|----|----|----|----|
    1    QGYPSVFYGDYYGIPTHGVPAMKSKIDPLLQARQTFAYGTQHDYFDHHDIIGWTREGNSS   420
    3    EGYPCVFYGDYYGIPQYNIPSLKSKIDPLLIARRDYAYGTQHDYLDHSDIIGWTREGGTE   418
    2    QGYPSVFYGDYYGIPTHSVPAMKAKIDPILEARQNFAYGTQHDYFDHHNIIGWTREGNTT   420
    4    QGYPSVFYGDYYGIPTHGVPAMRSKIDPILEARQKYAYGKQNDYLDHHNIIGWTREGNTA   420

                 430       440       450       460       470       480
         |----|----|----|----|----|----|----|----|----|----|----|----|
    1    HPNSGLATIMSDGPGGNKWMYVGKNKAGQVWRDITGNRTGTVTINADGWGNFSVNGGSVS   480
    3    KPGSGLAALITDGPGGSKWMYVGKQHAGKVFYDLTGNRSDTVTINSDGWGEFKVNGGSVS   478
    2    HPNSGLATIMSDGPGGEKWMYVGQNKAGQVWHDITGNKPGTVTINADGWANFSVNGGSVS   480
    4    HPNSGLATIMSDGAGGSKWMFVGRNKAGQVWSDITGNRTGTVTINADGWGNFSVNGGSVS   480

                 490       500       510       520       530       540
         |----|----|----|----|----|----|----|----|----|----|----|----|
    1    VWVKQ                                                          485
    3    VWVPRKTTVSTIARPITTRPWTGEFVRWTEPRLVAW                          514
    2    IWVKR                                                          485
    4    IWVNK                                                          485
```
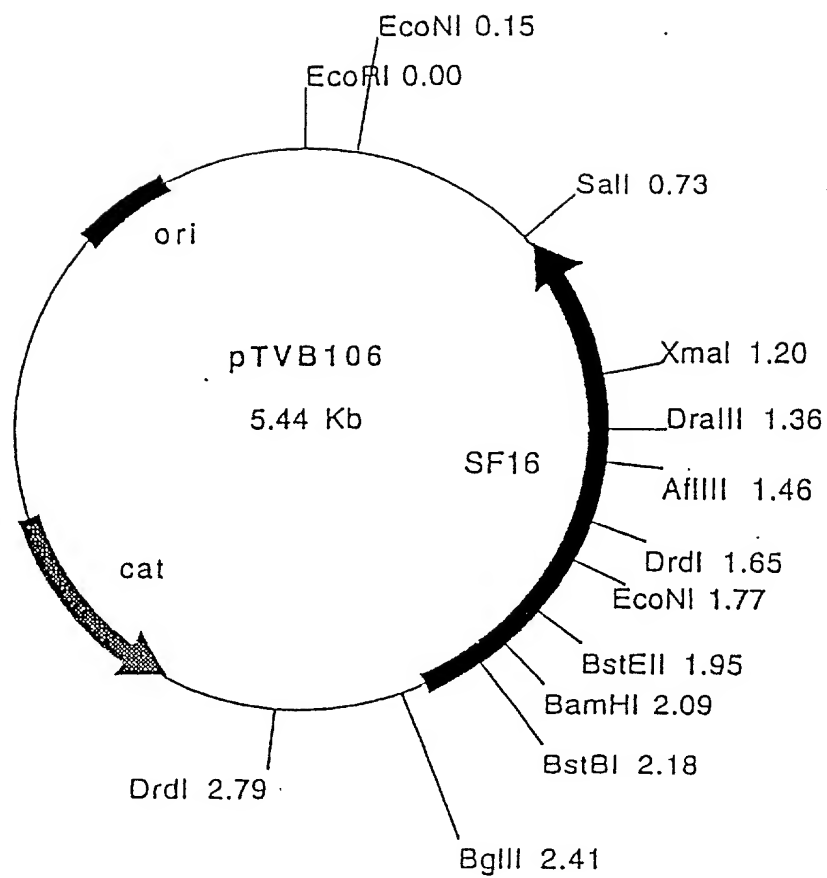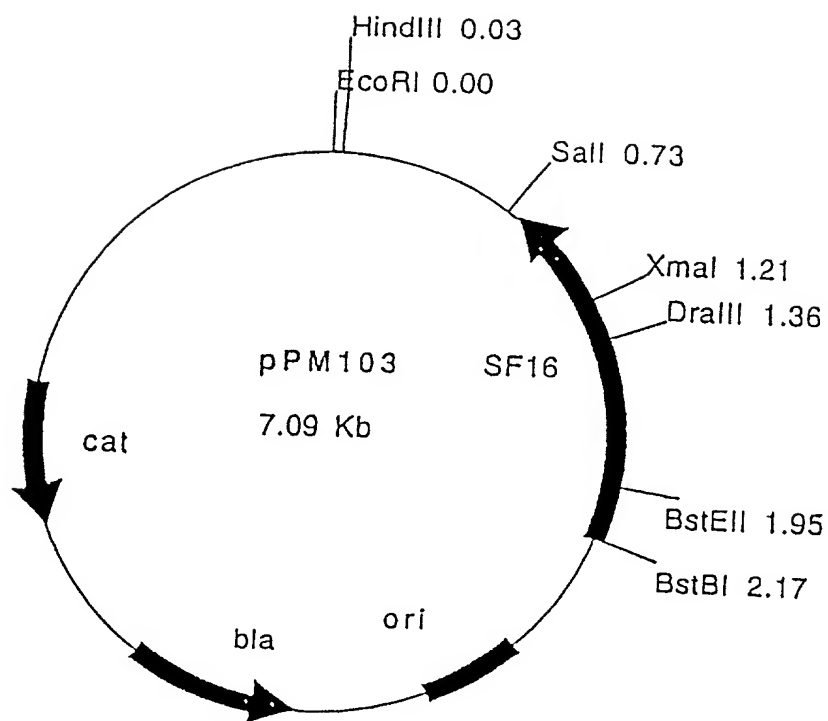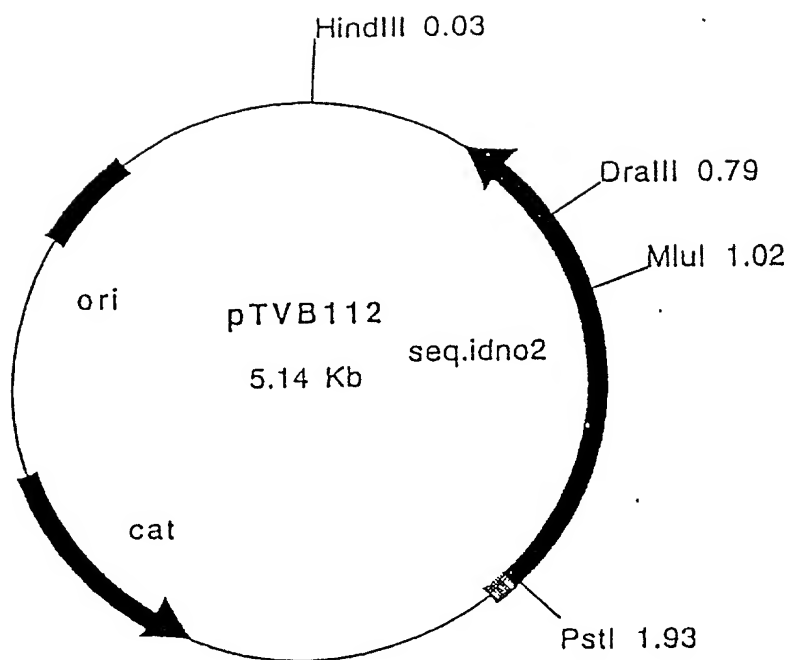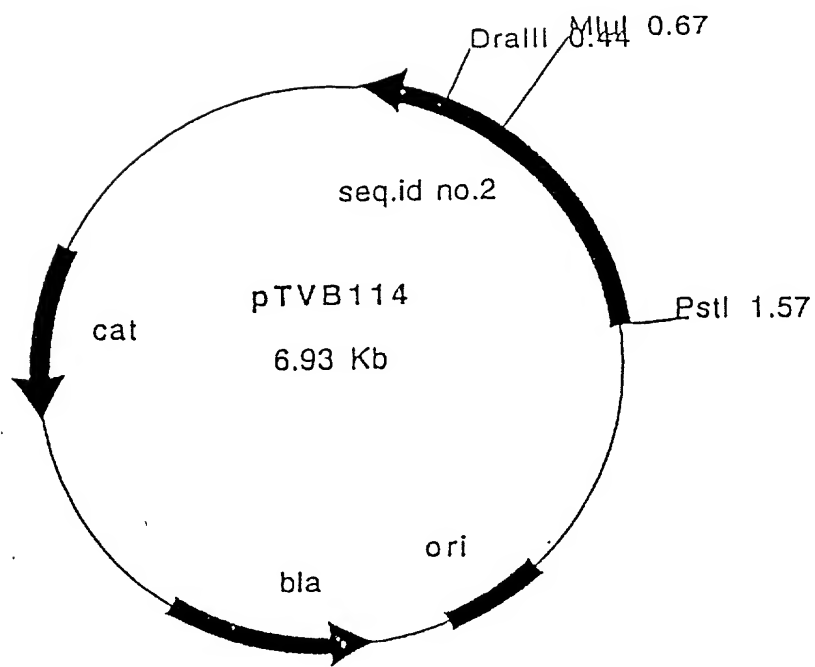
Fig. 1

Fig. 2

HindIII 0.03
EcoRI 0.00
SalI 0.73
XmaI 1.21
DraIII 1.36
BstEII 1.95
BstBI 2.17

pPM103   SF16

7.09 Kb

cat

bla

ori

Fig. 3

Fig. 4

DraIII 0.44 MluI 0.67

seq.id no.2

pTVB114
6.93 Kb

cat

Pstl 1.57

ori

bla

Fig. 5